Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] A method of aligning a set of lithographic patterns to one another on a substrate during a lithographic process, said substrate having a front side surface and a backside surface, said method comprising:
providing a symmetric data image on said front side surface such that said symmetric image is identical whether viewed from said front side or said backside;
generating a pattern of said front side surface image on said substrate;
flipping said substrate;
detecting said generated pattern; and
aligning subsequent lithographic process steps to said detected generated pattern.

[c2] The method of claim 1 wherein said symmetric data further comprises integrated circuit chip data.

[c3] The method of claim 1 wherein said symmetric data further comprises kerf data.

[c4] The method of claim 1 wherein said symmetric data comprises both integrated circuit chip data and kerf data within a single optical field.

[c5] The method of claim 1 comprising generating said pattern such that said generated pattern includes alignment marks.

[c6] The method of claim 1 including bonding said substrate to a mechanical support structure.

[c7] The method of claim 5 further comprising having said alignment marks on a trench level or a device isolation level.

[c8] The method of claim 5 further comprising mirroring said alignment marks symmetrically about an axis.

[c9] The method of claim 2 comprising defining an original image of a portion of said symmetric data by a plurality of coordinates.

[c10] The method of claim 9 including defining four corner coordinates of said plurality of coordinates as $(0, Y_{max})$, (X_{max}, Y_{max}), an origin $(0, 0)$ and $(X_{max}, 0)$.

[c11] The method of claim 10 further comprising mirroring said portion of said symmetric data about an axis.

[c12] The method of claim 11 wherein said axis is an ordinate axis.

[c13] The method of claim 11 further including:

multiplying coordinates in one dimension by negative 1 to create coordinates of a mirror image of said portion of said symmetric data; and

merging said mirror image with said portion of said symmetric data.

[c14] The method of claim 13 wherein said four corner coordinates are represented by $(0, Y_{max})$, $(-X_{max}, Y_{max})$, $(0, 0)$ and $(-X_{max}, 0)$, after said multiplying step.

[c15] The method of claim 13 further including adding a constant value to said coordinates of said merged data such that said origin is aligned with a lower left corner.

[c16] The method of claim 15 wherein said constant value comprises X_{max}, such that said four corner coordinates of said merged data are further represented by $(0, Y_{max})$, $(2_*X_{max}, Y_{max})$, $(0, 0)$ and $(2_*X_{max}, 0)$.

[c17] The method of claim 5 wherein said alignment marks are on a trench level or device isolation level.

[c18] The method of claim 1 wherein said generated pattern is detected by removing a portion of said substrate's backside.

[c19] The method of claim 18 wherein said alignment marks are detectable on said backside surface after said re-

moval of said a portion of said substrate's backside.